Behavioural Monitoring to Generate Precision Nudges

Participant Information Sheet (PIS)

This PIS should be read in conjunction with The University privacy notice: http://documents.manchester.ac.uk/display.aspx?DocID=37095

You are being invited to take part in a research study as part of a student project that aims to recognise human motivation and social engagement from smartphone data. Before you decide whether to take part, it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for taking the time to read this.

About the research

➢ **Who will conduct the research?**

This research is conducted by Ahmed Ibrahim, a PhD student at the University of Manchester – department of computer science. The research is supervised by Professor Simon Harper and Dr. Sarah Clinch - University of Manchester. Address details are below.

Name	Email	Address
Ahmed Ibrahim	Ahmed.ibrahim-2@manchester.ac.uk	IAM lab, Kilburn Building. M13 9PL. Manchester, UK
Simon Harper	Simon.harper@manchester.ac.uk	2.60 Kilburn building, M13 9PL Manchester, UK
Sarah Clinch	Sarah.clinch@manchester.ac.uk	Kilburn building, M13 9PL Manchester, UK

➢ **What is the purpose of the research?**

The purpose of this research is to recognise human motivation and social engagement by monitoring the behaviour of the participants through their own passively sensed personal mobile devices (i.e. smartphones, smartwatches).

➢ **Will the outcomes of the research be published?**

Results will be published in conferences, journals and student thesis.

➢ **Who has reviewed the research project?**

This research project has been reviewed by the Ethics Committee of the Department of Computer Science.

➢ **Who is funding the research project?**

This research is funded by the Ministry of Education in Saudi Arabia, and by The CHERISH-DE Centre at Swansea University (UK EPSRC grant number EP/M022722/1).

➢ **What happens after the research project is finished?**

Once the project is finished, the app will still be working on your phone. However, we will stop synchronising the data to our server and it is up to you to keep the app or delete it. If you decide to delete it, we will be happy to help you with that. If you do not delete the app we will still not receive any further data from you.

Data that is synced to our server during your participation will be kept in anonymised form for a minimum of five years after study completion. This data may be used in future research or shared with researchers from other institutions upon request.

What would my involvement be?

➢ **What would I be asked to do if I took part?**

You will attend an introductory session of 30 minutes. The introductory session can be online due to the COVID-19 precautions. During this session we will ask you questions about your interests, help you install the app onto your phone and explain how the app works. We'll also ask you some short questions about your normal socialising and drinking behaviour. We'll be happy to answer any of your questions during this session, but if you have a subsequent query then feel free to contact the research team using the details on page 1 of this document.

You will be asked to enable the collection of the data specified in the below table. The collected data will be stored locally on the phone and synced with a secure server hosted internally at the University of Manchester.

Source	Data
GPS	Location coordinates (longitude and latitude).
Weather	Temperature, humidity, pressure, wind speed, cloudiness, amount of rain and snow, times of sunrise and sunset.
Applications	App usage data.
Notifications	All notifications generated by any app installed on the phone such as notifications from news or emails apps. All numbers and emails contained in the notifications are de-identified by replacing them with asterisks. For example, if you received "from 555-555-5555, your package has been delivered"; it will be stored as "from *, your package has been delivered".
Screen	Screen interactions, visited websites.
Wifi	Access points.
Bluetooth	Nearby devices.
Battery	Charging status, charging start time, charging end time, discharging start time, discharging end time.
Calls	Calls types (outgoing, incoming and missed calls) and times. Numbers are stored in an encrypted format.
Messages	Message types (outgoing, incoming) and times. Numbers are stored in an encrypted format. Message content is not recorded.
Keyboard	Time and the typed letters. (numbers and emails are replaced with asterisks).
Consent form	Name and signature.
Questionnaire	We ask about interests that we infer from the data.
Activity recognition	Tilting, running, on vehicle, walking, on bicycle, on foot.

Opening and closing interviews	Audio recordings (deleted following transcription). Your gender and responses to questions about your interests, how you socialise and how often you drink alcohol.

You will be asked to keep the installed app running for six months and carry your phone as you would normally do. We will send you monthly questionnaire (via email) about your motivations and you will be asked to respond by filling the questionnaire and send it back. Each questionnaire is expected to take between 3 and 5 minutes.

At the end of the study, to evaluate our work, you will be asked to join an interview to ask you about the interests that we recognised from your data and understand what interests did we miss and why did we miss them.

You also have the option to participate in two further ways:

1. You can opt-in to four mini-interviews (one every six weeks for around 10-15 mins each) in which we ask you about your recent socialising and drinking activities. These interviews will take place online.
2. You can choose to borrow a Fitbit smartwatch from the research team to wear during the study. At the end of the study period you will return this device to us and can choose whether or not to share with us any location traces captured by this device.

Both of the above are optional. You can participate in the study without doing either of these.

➢ **Will I be compensated for taking part?**

As a token of appreciation, participants will be provided with an £18 Netflix gift card at the beginning of the experiment that covers three months basic subscription. After the third month, participants will be given the second £18 Netflix card that covers three additional months of Netflix subscription.

Participants who participate in the optional mini-interviews will receive their choice of an additional £18 Netflix or Amazon gift card at the end of the study period.

➢ **What happens if I do not want to take part or if I change my mind?**

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form.

If you decide to take part, you are still free to withdraw at any time without giving a reason and without detriment to yourself. You will need to let us know whether or not to keep your data. If requested, your data will be removed from the dataset and will not be used in any future publications. This does not affect your data protection rights.

If you choose to participate in the optional mini-interviews, then you must also consent to those interviews being audio recorded. However, we aim to ensure that you are comfortable with the recording process at all times and you are free to stop the interview and/or recording at any time.

If you decide to withdraw before the end of the third month, you will not be eligible for further compensation, and unfortunately, we will not be able to give you the second gift card. Likewise, if you do not participate through to the end of the study, we will be unable to provide you with a gift card for mini-interview participation.

Data Protection and Confidentiality

➢ **What information will you collect about me?**

In order to participate in this research project we will need to collect your contact details and information that could indirectly identify you, such as location data. Please see the table above for more details.

If you choose to participate in the optional mini-interviews, then we will audio-record these using the researcher computer that is used to make the call. The hard drive on this device will be encrypted.

If you choose to borrow a FitBit device then you also have the option to contribute the location traces captured using this device.

➢ **Under what legal basis are you collecting this information?**

We are collecting and storing your information in accordance with data protection law which protects your rights. These state that we must have a legal basis (specific reason) for collecting your data. For this study, the specific reason is that it is a process necessary for research purposes only.

➢ **What are my rights in relation to the information you will collect about me?**

You have a number of rights under data protection law regarding your personal information. For example, you can request a copy of the information that we hold about you.

If you would like to know more about your different rights or the way we use your personal information to ensure we follow the law, please consult our [Privacy Notice for Research](#).

➢ **Will my participation in the study be confidential and my personal identifiable information be protected?**

In accordance with data protection law, The University of Manchester is the Data Controller for this project. This means that we are responsible for making sure your personal information is kept secure, confidential and used only in the way you have been told it will be used. All researchers are trained with this in mind, and your data will be looked after in the following way:

- To ensure confidentiality of data in digital format:
    - De-identify the data via an assigned participant ID only known to the research team (also referred to as pseudonymised or coded data).
    - Encrypt the submission of data between the participant's phone and the university's server to ensure individuals cannot be readily identified.
    - Remove any identifying or sensitive data revealed in interviews during the process of audio transcription.
    - Audio recordings will be transferred securely to a University-authorised third-party transcription service. Audio recordings will be deleted following transcription.

- o De-identify numbers and emails contained in the keyboard and notification texts by replacing them with asterisks.
- o Only the study team at The University of Manchester will have access to your data
- To ensure confidentiality of data in non-digital format:
  - o We will use locked cabinets inside Kilburn building to store your consent form and personal information.
  - o Data in non-digital formats (e.g. your consent form) will be digitized within one month of joining the experiment and securely destroyed. The digitised data will be stored with the collected data in secure servers hosted by the University of Manchester.
- Data could be shared for academic research purposes only and will be anonymised before sharing with other institutions. Any identifiable raw data will not be shared and will be either encrypted or replaced by other unidentifiable data. For example, GPS coordinates will be replaced by the general category of the place which they represent (e.g. restaurant). The below table indicates how each collected data will be prepared for sharing.

Sensor	Shared data
GPS	Sequences of places categories: e.g. home → restaurant → home
Weather	Status: cold, hot, nice
Applications	App usage data
Notifications	Will not be shared.
Screen	Screen status: On/Off
Wifi	Access points labels and ids will be shared in an encrypted form.
Bluetooth	Devices information will be encrypted before sharing.
Battery	Charging and discharging times will be shared
Calls	Calls duration, time, type (received/incoming/missed). Numbers will be shared in an encrypted format.
Messages	Message types (outgoing, incoming) and times. Numbers will be shared in an encrypted format. Message content is not recorded.
Keyboard	Only keystrokes times will be shared.
Consent form	Will not be shared.
Questionnaire	Responses associated with anonymised IDs will be shared
Activity Recognition	Activity types and times will be shared
Interview Responses (optional)	Anonymised transcripts will be shared. Any personal or sensitive information (including, for example, names of people or places) will be redacted.
Fitbit Location Data (optional)	As GPS.

- If during the study, we become aware of evidence about any current or future illegal activities, we have a legal obligation to report this and will, therefore, need to inform the relevant authorities.

Please also note that individuals from The University of Manchester or regulatory authorities may need to look at the data collected for this study to make sure the project is being carried out as planned. This may involve looking at identifiable data. All individuals involved in auditing and monitoring the study will have a strict duty of confidentiality to you as a research participant.

What if I have a complaint?

- ➢ **Contact details for complaints**

If you have a complaint that you wish to direct to members of the research team, please contact:

Name	Email	Address	Telephone
Simon Harper	**Simon.harper@manchester.ac.uk**	2.60 Kilburn building, M13 9PL Manchester, UK	0161 275 0599
Sarah Clinch	**Sarah.clinch@manchester.ac.uk**	2.24 Kilburn building, M13 9PL Manchester, UK	0161 275 7190

Note that the above telephone numbers are the research team's work telephones may not be redirected during periods where the government advice is to work from home. Emails will continue to be monitored during these periods.

If you wish to make a formal complaint to someone independent of the research team or if you are not satisfied with the response you have gained from the researchers in the first instance then please contact

The Research Governance and Integrity Officer, Research Office, Christie Building, The University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: research.complaints@manchester.ac.uk or by telephoning 0161 275 2674.

If you wish to contact us about your data protection rights, please email dataprotection@manchester.ac.uk or write to The Information Governance Office, Christie Building, The University of Manchester, Oxford Road, M13 9PL at the University and we will guide you through the process of exercising your rights.

You also have a right to complain to the Information Commissioner's Office about complaints relating to your personal identifiable information Tel 0303 123 1113

Link for Information Commissioner's Office: https://ico.org.uk/concerns

Contact Details

If you have comments or questions, please contact:

Name	Email	Address
Ahmed Ibrahim	**ahmed.ibrahim-2@manchester.ac.uk**	IAM lab, Kilburn Building. M13 9PL. Manchester, UK